Volume 4

1962-1963

STATE OF ALASKA

William A. Egan, Governor

ANNUAL REPORT OF PROGRESS, 1962 - 1963

FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-4

SPORT FISH INVESTIGATIONS OF ALASKA

Alaska Department of Fish and Game

Walter Kirkness, Commissioner

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INTRODUCTION

This report of progress consists of Job Segment Reports from the State of Alaska Federal Aid in Fish Restoration Project F-5-R-4, "Sport Fish Investigations of Alaska".

The project is composed of 25 separate studies designed to evaluate the various aspects of the State's recreational fishery resources. While some studies are of a more general nature and deal with gross investigational projects, others have been developed to evaluate specific problem areas. These include studies of king salmon, silver salmon, grayling and State Access requirements. The information gathered will provide the necessary background data for a better understanding of local management problems and development of future investigational studies.

The assembled progress reports may be considered fragmentary in many respects due to the continuing nature of the respective studies. The interpretations contained therein, therefore, are subject to re-evaluation as work progresses and additional information is acquired.

Volume 4 Report No. 13-A

JOB COMPLETION REPORT

RESEARCH PROJECT SEGMENT

State: ALASKA Name: Sport Fish Investigations of Alaska.

Project No: F-5-R-4 Title: Inventory and Cataloging of the Sport Fish and Sport Fish Waters in the Interior of Alaska.

Job No: 13-A

Period Covered: July 1, 1962 to March 1, 1963.

Abstract:

In the period of study, based on findings and recommendations, thirteen lakes were surveyed and found not suitable for fish. Twenty-two lakes were surveyed for species composition. Four barren lakes were located and recommended for stocking with rainbow trout. Volumetric surveys were completed on two lakes.

Establishment of a salmon sport fishery in the Yukon River System is discussed.

The Unalakleet River military fishing camp creel census information was analyzed.

Recommendations:

1. The present inventory and cataloging of northern Interior waters be continued.

2. The eradication of undesirable fish in Birch Lake be accomplished.

3. Introduce lake trout into Harding Lake for the purpose of creating a sport fishery.

4. Establishment of a sport fishery on specified tributaries to the Tanana River which support relatively large populations of anadromous fish.

5. Obtain complete harvest information on the Unalakleet River military sport fishery.

6. More effort should be extended to the outlying waters for determination of their potential importance to the northern Alaska Sport fishermen.

Objectives:

To conduct lake and stream surveys and evaluate the extent of the potential and current use of the waters readily available to the angler.

To investigate the possible source of grayling and lake trout eggs for experimental hatching and rearing.

To determine the relative need for future management investigations and to direct the course of such studies.

Techniques Used:

The area of study for this project is approximately 400,000 square miles in size and is located north of the Alaska Range. The area is bounded to the west and north by the Bering, Chukchi, and Beaufort Seas. Canada is situated along the eastern boundary.

Indigenous sport fish of the area are: Sheefish, Stenodus leucichthys (Guldenstadt); Arctic grayling, Thymallus arcticus; lake trout, Salvelinus namaycush; northern pike, Esox lucius; burbot, Lota lota; silver salmon, Onocorhynchus kisutch; king salmon, Oncorhynchus tshawytscha; and chum salmon, Oncorhynchus keta. Arctic grayling is currently the most important game fish in the area.

Rainbow trout, Salmo gairdneri, have been introduced and found to do well in waters that meet their environmental requirements. Juvenile silver salmon have been found to be voracious feeders in stocked lakes and are

readily taken by anglers. Arctic grayling which are less sensitive to the rigors of the sub-arctic conditions are considered an acceptable fish for small lakes and ponds where winter survival prohibits the introduction of other fish.

Information collected thus far is due primarily through the efforts of the Fish and Wildlife Service, the Alaska Department of Fish and Game and individual contacts with local inhabitants of the area. Data was also utilized from previous studies initiated by the Federal Aid in Fish Restoration Projects and in the general management program of the Departments' Sport Fish and Commercial Fishery Divisions.

Standard lake and stream survey techniques were employed in obtaining information on new and previously observed fish populations. Samples were obtained by the use of experimental 125 foot, 1/4 to 2 inch graduated mesh gill nets and by hook and line. Salmon distribution was determined by aerial observations. Creel census information on the Unalakleet River was collected by military personnel. Survey information (pH, water temperature, thermocline levels, dissolved oxygen, etc.) on waters mentioned in this report are available in the files of the Alaska Department of Fish and Game, Fairbanks field office and in the Juneau Division Offices.

Major emphasis was directed toward those waters in the vicinity of the Alaska and Richardson Highways. Preliminary reconnaissance surveys were also made along the Steese and Taylor Highways. Two additional lakes were surveyed along portions of the new Fairbanks - Anchorage Highway, presently under construction (Table 1).

Findings:

Evaluating the use and present fish stocks in unknown bodies of waters is an important phase of the program. Recommendations for the introduction of manageable fish populations are give for each lake surveyed:

Lake	Species Recommended for Stocking	Available Highway System	Nearest Mile Post	Nearest Community
Birch	Silvers Rainbow trout	Richardson	307	Fairbanks
Craig No. 3	None	Richardson	1382	Delta-Jct.
Delta-Clearwater	None	Richardson	269	Delta-Jct.
Donna	Rainbow Trout	Alaska	1391	Delta-Jct.
Donnelly Dome (6 in No.)	None	Richardson	242	Delta-Jct.
George Lake	None	Richardson	1385	Delta-Jct.
Harding	Lake Trout	Richardson	322	Fairbanks
Hartney	None	Richardson	323	Fairbanks
Lisa	Rainbow Trout Silvers	Richardson	1381	Delta-Jct.
Lisa No. 2	Grayling	Richardson	1381	Delta-Jct
Moosehead	None	Richardson	1385	Delta-Jct.
Monterey	None	Richardson	360	Fairbanks

Lake	Species Recommended for Stocking	Available Highway System	Nearest Mile Post	Nearest Community
Motor Pool	Grayling	Richardson	360	Fairbanks
Otto's	None	Fairbanks - Anchorage	153	Nenana
Rapid	Rainbow Trout	Richardson	227	Delta-Jct.
Wainwright Cooling Pond	Rainbow Trout	Richardson	360	Fairbanks
Eight Mile	None	Fairbanks - Anchorage	153	Nenana
16.5 Mile	None	Chena Hot Springs Rd.	16.5	Fairbanks
31 Mile	None	Richardson	340	Fairbanks
(Unnamed)	None	Richardson	257	Delta-Jct.

Table 1. Gill-Net Sampling Record, 1962

Water Sampled	Date	Species	Number of Fish Taken	Range (In.)	Frequency*	% Composition
Bolio Lake	7-23 7-24	Silver	33	5.2-8.0	.09	100
Delta	8-23	Round Whitefish	6	8.8-14.0	.30	22
Clearwater	8-24	Lake Whitefish	4	7.4-14.8	.20	15
Lake		Cisco	3	10.9-12.5	.10	11
		Long Nose Sucker	12	11.7-17.8	.60	44
		Pike	2	21.2-21.5	.10	07
Harding Lake	10-7	Pike	2	19.8-23.0	.06	50
Lake	10-8	Cisco	2	6.6-6.8	.06	50
Moose Creek (Northway)	10-10	Pike	11	11.3	.20	100
Two-Mile	7-30 to 7-31	Silver	1	6.3	.01	100
16.15 Mi. Chena Hot Spr. Road	8-19 8-20	Pike	1	8.2	.04	100
Thirty Mile	8-1	Burbot	1	10.3	.02	17
Lake		Long Nose Sucker	4	6.1-11.2	.09	66
		Cisco	1	10.7	.02	17

* Number of fish caught/hour in 125 foot 3/4"-2" experimental gill-net.

Table 1 (Con't)

Water Sampled	Date	Species	Fish Taken	Range (In.)	Frequency	% Composition
Eighty-One Mile Lake	8-5 8-6	Rainbow	3	5.6-6.8	.20	100

No fish were taken from the following lakes:

Craig Lake No. 3
Donnelly Dome Lakes
Donna Lake
Hartney Lake
Lisa Lake
Moosehead Lake
Otto's Lake
Rapid Lake

Volumetric investigations were conducted on two lakes in the vicinity of Fairbanks for the initiation of future studies.

Harding Lake, located near Milepost 322 on the Richardson Highway, is the largest of three lakes near Fairbanks (population estimated to be 22,000). Harding Lake is 2,633 surface acres in size with a volume of 196,251 acre feet. Maximum depth of the lake is 170 feet with no outlet and one inlet. A possible second inlet occurs during periods of high watertable. A lake contour map with bottom topography is presented in Figure 1.

Birch Lake is one of the remaining two large lakes accessible by highway to the people of Fairbanks (Figure 2). The 704 surface acre lake contains three southern and two northern inlets with an outlet at the southwest edge of the lake. The northeast and southern inlets are of little significance, normal flow being less than 1 c.f.s. The northwest inlet is considered to have some importance to spawning fish with summer flows estimated to be in excess of 2 c.f.s. The calculated volume of the lake is 10,267 acre feet.

Grayling:

Location of suitable grayling stocks for egg takes is needed for the planned accelerated stocking program. Populations of grayling suitable for an egg taking operation were not located in this segment of the work. The more accessible grayling populations north of the Alaska Range are presently experiencing heavy fishing pressures. Interference with these natural spawning populations is not deemed advisable. However, large grayling populations do exist in the outlying areas. The populations in Norton Sound area are believed to be of significant size to warrant future investigations for this type of operation.

Lake Trout:

Native lake trout populations occur in some of the fresh water lakes located in the Kuskokwim and Yukon River

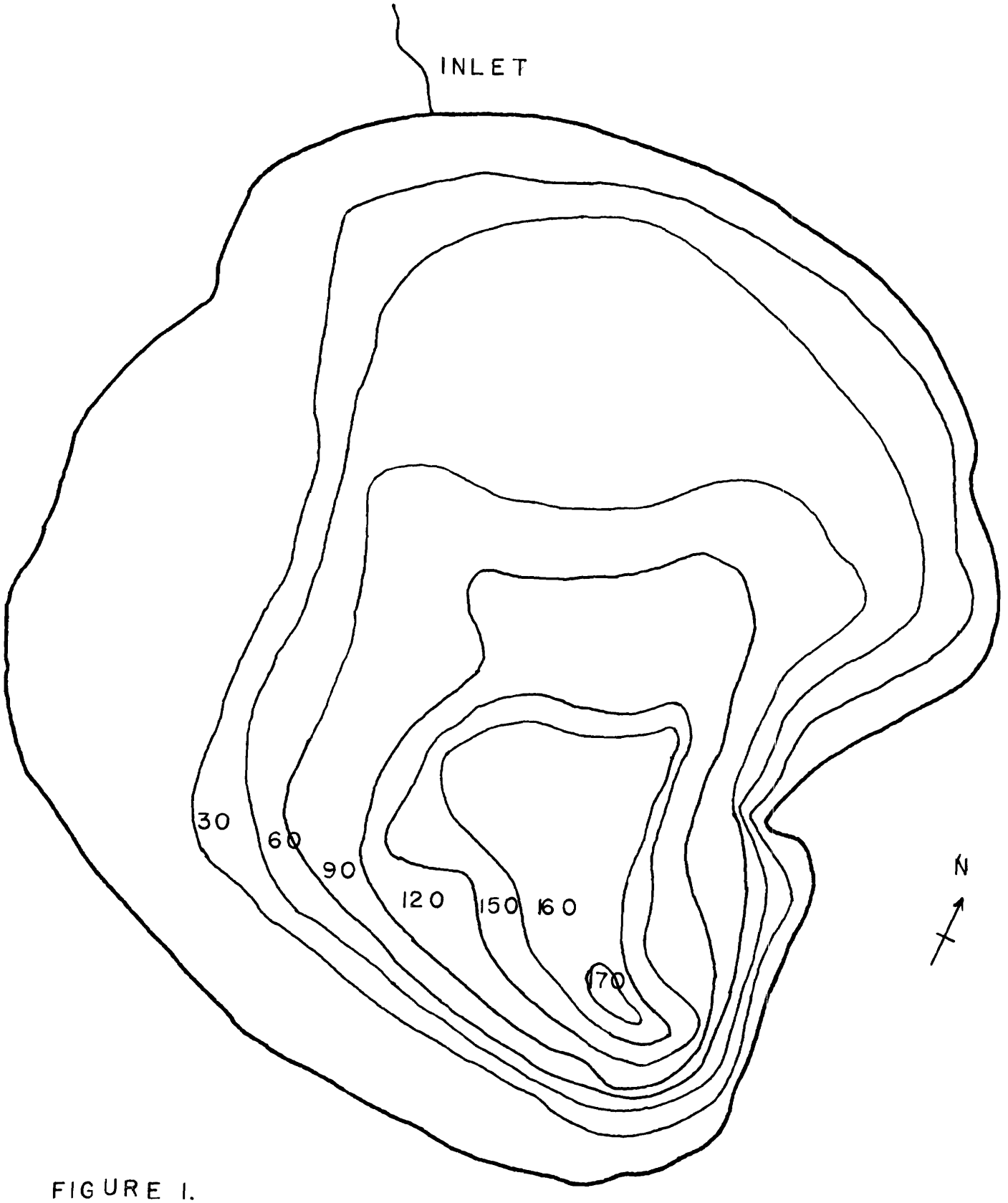

FIGURE 1.
HARDING LAKE
SURFACE AREA = 2,633 AC.
VOLUME = 196,251 AC. FT.
SCALE = 1 INCH = 1,650 FT.

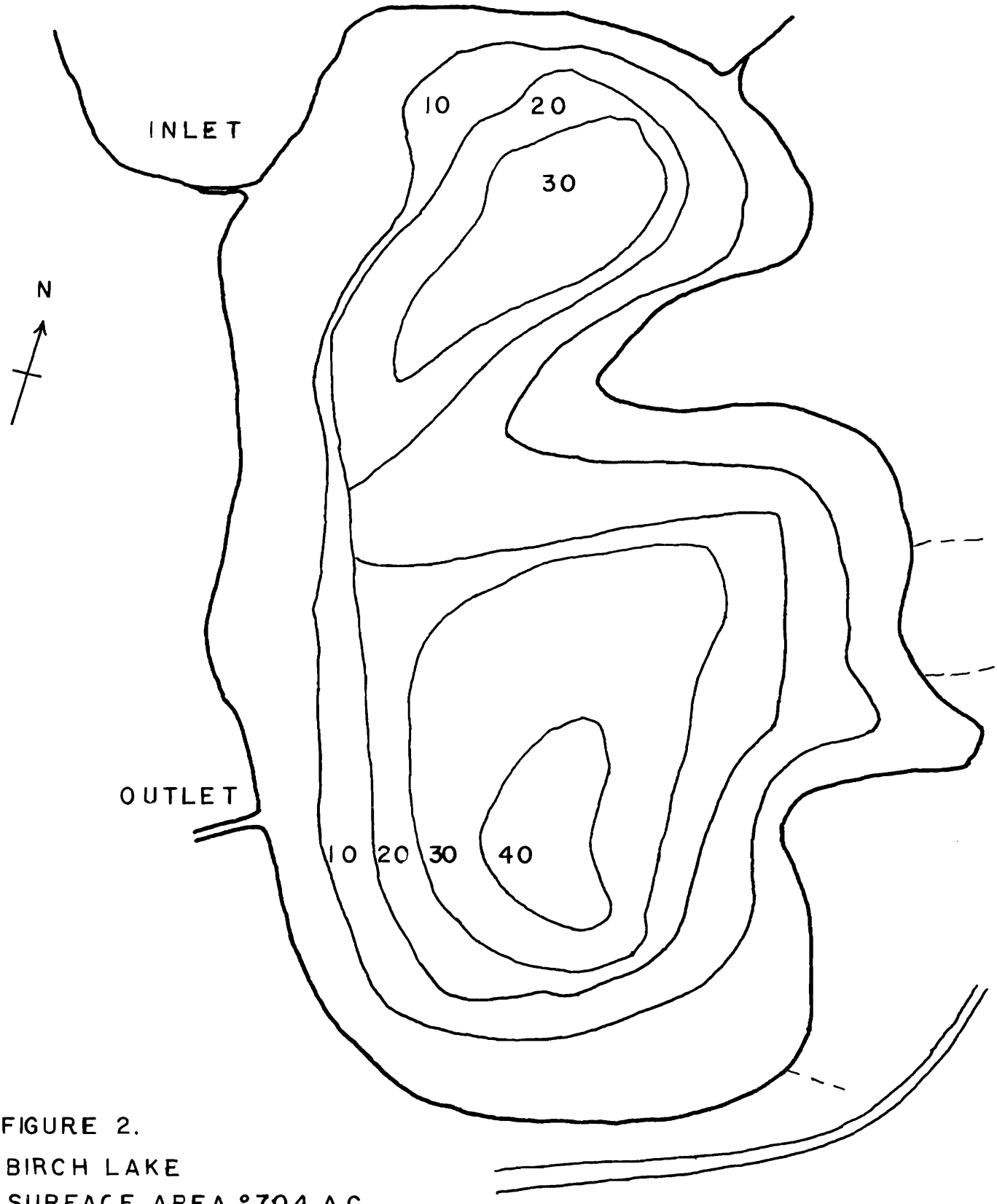

FIGURE 2.
BIRCH LAKE
SURFACE AREA @ 704 AC.
VOLUME @ 10,267 AC. FT.
SCALE @ 1 INCH = 1000 FT.

drainages. The introduction of lake trout into some of the more accessible lakes has been attempted with varied results. Long Lake, located approximately 8 miles south of Milepost 1359 on the Alaska Highway, contains introduced lake trout ranging from 8 to 14 inches in length. The date of introduction is not known. Other lake trout populations are not known to occur in this vicinity. Harding Lake, located near Milepost 322 on the Richardson Highway, was planted with lake trout in 1939 and 1940. A single 22 pound lake trout was taken with a test net in 1960. The existing population is low and does not at present support a fishery.

Unalakleet River Fishery:

King, silver, pink and chum salmon enter the river systems of northern Alaska. Most of the harvested salmon are taken in the subsistence and commercial fisheries. An established sport fishery currently exists on the Unalakleet River where two sport fishing camps were established by the military in 1958 and 1962. The 1962 voluntary creel census information is given in Tables 2 through 13. Due to a mishap in the transfer of creel census forms to Fairbanks from one of the two fishing camps, only partial conclusions are possible. An estimated 451 persons fished 900 man fishing days for a catch of 88 kings, 596 silvers and 763 chum salmon. Approximately 4,162 Dolly Varden and 896 grayling were also caught. No pink salmon were reported taken. These figures represent an estimated 63 per cent of the total catch in the 1962 Unalakleet sport fishery. Creel census information indicated a total of estimated 868 visitors were received at both camps in 1962.

Fishing commenced soon after spring break-up in mid May and continued until the last of August.

King, silver, pink and chum salmon are taken in the commercial and subsistence fishery on Unalakleet River. Pink salmon are taken in the greatest numbers. In addition to salmon, Dolly Varden, grayling and whitefish are also taken.

Table 2. Weights of King Salmon Taken in the Unalakleet Sport Fishery, 1962.*

Weight Class (Lbs.)	June	July	August	Total No. Lbs.	Total No. Fish Caught
8		10		80	10
9		3		27	3
13		11		143	11
16		10		160	10
18		2		36	2
23		2		46	2
Totals:		38		492	38

*Exclusive of 88 Kings, 596 Silvers, 763 Chum Salmon and 4,162 Dolly Varden and 896 Grayling.

Table 3. Weights of Silver Salmon Taken in the Unalakleet Sport Fishery, Summer 1962. *

Weights/Class (lbs.)	June	July	August	Total No. Lbs.	Total No. Fish Caught
6.5			24	156	24
8			70	560	70
9			31	279	31
10			29	290	20
11		5	2	77	7
12			5	60	5
14			13	52	13
Totals:		5	174	1474	179

* Exclusive of 88 Kings, 596 Silvers, 763 Chum Salmon and 4,162 Dolly Varden and 896 Grayling.

Table 4. Weights of Chum Salmon Taken in the Unalakleet Sport Fishery, 1962

Weights/Class (lbs.)	June	July	August	Total No. Lbs.	Total No. Fish Caught
3		20		60	20
4		40		160	40
5		39	8	235	47
6	1	20	6	175	27
7		88	4	638	93
8		97	2	792	99
9		27		243	27
10	4	116	8	1280	128
11		78	6	924	84
12		20		240	20
13		44	8	572	44
15			8	120	8
Totals:	6	589	42	5439	637

* Exclusive of 88 Kings, 596 Silvers, 763 Chum Salmon and 4,162 Dolly Varden and 896 Grayling.

Table 5. Weights of Pink Salmon Taken in the Unalakleet Sport Fishery, 1962.*

Weights/Class (lbs.)	June	July	August	Total No. Lbs.	Total No. Fish Caught
3	30	163	5	594	198
4	10	25	3	152	38
5		147	4	755	151
6	2	232		1404	234
7		183		1281	183
8		105		840	105
12		9		108	9
Totals:	42	864	12	5134	918

* Exclusive of 88 Kings, 596 Silvers, 763 Chum Salmon and 4,162 Dolly Varden and 896 Grayling.

Table 6. Weights of Dolly Varden Taken in the Unalakleet Sport Fishery, 1962.*

Weights/Class (lbs.)	June	July	August	Total No. Lbs.	Total No. Fish Caught
1	23	238	388	947	649
2	4	463	338	1856	805
3			234	702	234
4		87	33	480	120
7		8		56	8
Totals:	27	796	993	4041	1816

Table 7. Weights of Grayling Taken in the Unalakleet Sport Fishery, 1962.*

Weights/Class (lbs.)	June	July	August	Total No. Lbs.	Total No. Fish Caught
.25	2			.5	2
.75			77	5.5	77
1.00	4	120		124	124
1.50		74	69	215	143
2.00			2	4	2
Totals:	6	194	148	349	348

* Exclusive of 88 Kings, 596 Silvers, 763 Chum Salmon and 4,162 Dolly Varden and 896 Grayling.

Table 8. Weights of Whitefish Taken in the Unalakleet Sport Fishery, 1962*

Weights/Class (lbs.)	June	July	August	Total No. Lbs.	Total No. Fish Caught
.5		20		10	20
.75		19		16	19
1.00		192	2	194	194
1.50		38		57	38
2.00			4	8	4
4.00			1	4	1
Totals:		269	7	289	276

* Exclusive of 88 Kings, 596 Silvers, 763 Chum Salmon and 4,162 Dolly Varden and 896 Grayling.

Table 9. Summary of Total Pounds of Fish Caught in the Unalakleet River Sport Fishery, 1962.

Species	No. of Fish	Total Pounds
King Salmon	38	492
Silver Salmon	179	1,474
Chum Salmon	637	5,439.5
Pink Salmon	918	5,134
Dolly Varden	1,816	4,041
Grayling	348	349
Whitefish	276	289
Totals:	4,209	17,218.5

* Exclusive of 88 Kings, 596 Silvers, 763 Chum Salmon and 4,162 Dolly Varden and 896 Grayling.

Table 10. Size Range of Fish Taken in the Unalakleet Sport Fishery, 1962.

Size in Inches	Number Chum Salmon	Pink Salmon	Silver Salmon	King Salmon	Dolly Varden	Grayling	Whitefish
8					52	77	194
10	20	198			597	143	39
12	40	234				124	42
14	47	151	24		313		1
16	27	183	70		492	2	
18	59	105	31			2	
20	34		29		234		
22	99	38	13		120		
24	27		7		8		
26	128		5	3			
28	84			10			
30	20	9		11			
32	44			10			
36	8			2			
38							
40				2			
Totals:	637	918	179	38	1816	348	276

* Exclusive of 88 Kings, 596 Silvers, 763 Chum Salmon and 4,162 Dolly Varden and 896 Grayling.

Table 11. Unalakleet Creel Census for June and August, 1962

Date	Fishermen	NUMBER OF SPECIES CAUGHT							Hrs. Fished
		Chum Salmon	Pink Salmon	Silver Salmon	King Salmon	Dolly Varden	Grayling	Whitefish	
6/27	1		2			4	2		4.0
6/28	2					11			27.5
6/29	4	1	10			4	1		30.5
6/30	4	2	30			8	3		12.5
Totals:	11	3	42			27	6		74.5
8/1	6	2	7	1		64	13		77
8/2	4	2				52	13		42
8/3	8	7	5			58	13		32
8/4	9	6		1		108	2		54
8/5	8	3				80	2		33
8/6	5	10				26	2		21
8/7	4					16			20
8/8	8			1		82			72
8/9	11	1		1		128			84.5
8/10	13			4		70	5		66
8/11	8	1		9		18		1	68
8/12	8	3		12		59	12		79
8/13	8	2		16		55	8		67
8/14	11			18		37	3		64.5

Table 11 (con't.)

Date	Fishermen	NUMBER OF SPECIES CAUGHT Chum Salmon	Pink Salmon	Silver Salmon	King Salmon	Dolly Varden	Grayling	Whitefish	Hrs. Fished
8/15	9			21		31			71
8/16	6			28		25	3		54
8/17	5			3		25	18		28
8/18	6			7		16	20		52
8/19	7			14		17	10		62
8/20	8			18		7	15	1	47
8/21	11	1		3		2	3	2	50
8/22	9	1		11		11	3	1	85
8/23	8	3		5		6	3	2	75
8/24	2			1					24
8/25									
Totals:	170	42	12	174		993	148	7	1,328

*Exclusive of 88 Kings, 596 Silvers, 763 Chum Salmon and 4,162 Dolly Varden and 896 Grayling.

Table 12. Unalakleet Creel Census for July, 1963.

Date	Fishermen	NUMBER OF SPECIES CAUGHT							Hrs. Fished
		Chum Salmon	Pink Salmon	Silver Salmon	King Salmon	Dolly Varden	Grayling	Whitefish	
7/1	3	6	40		2				6
7/2	4	4	20				2		6
7/3	4	13	44		4	7	10		40
7/4	4	22	61		6	7	4		24
7/5	4	12	50		10	12	6		32
7/6	5	15	20		3	84	5	30	49
7/7	5	31	72		1	31	25	20	62
7/8	5	30	65			38	21	22	49
7/9	5	17	33		2	21	5	16	37
7/10	10	34	25			17	3	65	49.5
7/11	11	65	37		6	30		40	105
7/12	14	68	37		3	40		48	104
7/13	13	40	61			39	13	6	74
7/14	10	10	19			47	40	18	79
7/15	8		43		1	66	9	26	72.5
7/16	13	5	4			10	6	7	77
7/17	9	16	17			31			74
7/18	8	16	76			33	3		62
7/19	7	9	3			16	11		43
7/20	8	1	11			11			40
7/21	9	14	11		1	35	2		74
7/22	9	33	15			18	2		54
7/23	9	19				12	2		39
7/24	2	9	31						11
7/25	7	31	10			21	2	1	72
7/26	6	26	23			15	4		46

Table 12 (con't).

Date	Fishermen	NUMBER OF SPECIES CAUGHT Chum Salmon	Pink Salmon	Silver Salmon	King Salmon	Dolly Varden	Grayling	Whitefish	Hrs. Fished
7/27	8	7	17			21	6		45.5
7/28	11	25	5			57			88
7/29	8	10	12			38			77
7/30	4	1				20	4		36
7/31	3	12		5		29	10		22
Totals:	226	589	864	5	38	796	194	269	1647.5

Table 13. Summary of Sport Fishing Success on the Unalakleet River by Monthly Periods During 1962.

Month	No. of Fishermen	Fish Caught	Fish Per Fishermen	Total Hours	Fish Per Hour
June	11	78	7.9	74.5	1.0
July	226	2,755	12.5	1,647.5	1.7
August	170	1,376	8.1	1,328.0	1.0
Totals:	407	4,209	10.3	3,050	1.4

* Exclusive of 88 Kings, 596 Silvers, 763 Chum Salmon and 4,162 Dolly Varden and 896 Grayling.

Dolly Varden are the most important sport fish in regards to number caught with approximately 5,978 Dolly Varden taken during 1962.

King salmon enter the river system to spawn during the first week of June with the peak of the run occurring near the middle of July. Due to lapse in time necessary for reactivating the camp, most of the kings have passed the fishery. A total king salmon catch during 1962 was 126 fish. A total of 3,093 silver, chum and pink salmon were taken in the fishery.

The grayling harvest for the approximate three month period was 1,244 fish. Two hundred and seventy-six whitefish (species not known), ranging up to a length of 18 inches, were caught during the four month period.

Northern Alaska Fisheries

The need for disseminating information on the fisheries of northern Alaska became apparent during the course of survey work. Because of the wide separation between fishable populations and individual preference of fish, additional information other than the Department's published "Roadside Sport Fishing Guide" is in the process of being formulated. The information will be used to acquaint the public with the available northern Alaska fishing waters.

Potential Salmon Fisheries

The Yukon River system supports one of the largest salmon populations on the Pacific Coast with no established sport fisheries. Aerial reconnaissance flights were made over the Chena, Chatanika, Salcha, Richardson and Delta Clearwater Rivers, all tributaries to the Tanana River, in an attempt to locate salmon populations large enough to support a sport fishery. Findings and recommendations for the establishment of a sport fishery based on these observations may be found in separate reports on file with the Alaska Department of Fish and Game, Sport Fish Division.

Stream Surveys

Due to the lack of time and personnel, stream surveys have not been accomplished. Jenny M. Creek was surveyed as a possible source of water for the operation of a hatchery. The watershed was too unstable for hatchery requirements.

Age Determination

Scales were collected from grayling, pike and chum salmon. All scales collected have been mounted by the plastic impression method. Age analysis has not been completed at this date.

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Date: March 1, 1963.

Alex H. McRea, Director
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